

## ***Interactive comment on “Effective rainfall: a significant parameter to improve understanding of deep-seated rainfall triggering landslide – a simple computation temperature based method applied to Séchilienne unstable slope (French Alps)” by A. Vallet et al.***

**Anonymous Referee #3**

Received and published: 2 September 2013

The article tries to show that the use of effective rainfall is better than using actual rainfall for estimating rainfall triggered landslides. Their work is made more difficult by lack of reliable data, specially the very important temperature data from one station.

Overall the work is interesting. The authors should try to improve the English by reading English articles and changing their terminology to the current English terminology. Additionally they should try to simplify the methodology chapter which is too long.

C4605

This article should be published once these issues have been solved.

The authors consider that  $E_{To}$  is equal to  $E_{Tc}$  for the whole study. I am not sure if I can agree with this from a conceptual point of view. We all know that  $E_{To}$  is not equal to  $E_{Tc}$ , so the results will be seriously affected by this over-simplification. If the authors do not wish to have complex  $E_{Tc}$  calculations, then they should just use general average values of  $k_c$ . They can use values of 0.7-0.9 for the  $k_c$  values, based on the local vegetation and growth cycles, and thus improve their results.

IN Figure 1 I do not understand how they have limited the watershed. It covers the highland, which is rather strange.

In Figure 4, it is hard to distinguish the points on the left of the figures.

Some minor specific comments

8946.Line 1; 8947 Line 27; Pore water pressure build up by recharge . Please remove comma 8947.Line 24: Please rewrite this sentence 8948. Lin 23: landslide scientific studies. Please change to: scientific landslide studies 8951. Line 15: Additionally, runoff was applied only IN day when precipitations 8951. This paragraph seems rather confusing. You should try to separate the components ( $E_t$ , infiltration, soil, . Etc.) and not jump from one to another. 8951. Line 27. If not, evapotranspiration process can be restrained to null and the AWS is not reached, which leads to the absence of infiltration. I understand what you are trying to say, but here it seems that lack of evapotranspiration will lead to lack of infiltration. If it does not rain there will be no infiltration. This has nothing to do with evapotranspiration. Line 3. has a heavy network of weather. Change to dense network of weather. 8953. Line 16. Temperatures data recorded are considered not reliable. Change to: The recorded temperature data were considered as non reliable.. 8954. Equations. Why do you have to make the equations complicated? Please just use simple notations, instead of long notations. 8955. Line 8. using daily to the weekly time periods. Please change to : using daily to weekly time periods. 8957: you are repeating some of the definitions, like HR and  $E_{To}$  8959. Line 10 8959:

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Line 15. This coefficient was applied for the two first rain event day as temperature and Rs get equilibrated beyond extended period of rainfall. I am not sure if I understand this. 8959. Line 15. This coefficient was applied for the two first rain event day as temperature and Rs get equilibrated beyond extended period of rainfall. As well if  $\dot{E}T$  on the day before rain event ( $\dot{E}T_j - 1$ ) was less than  $\dot{E}T_j - 2$  by more than 2 C, the coefficient was also applied assuming cloudy cover was already significant. For the other days, was set to 1. Why are you doing this? What is the scientific base for the 2°C?

8962. Line 5. AWS capacity is dependent on the vegetation surface type, as root zone extension and permanent wilting point are variable from one plant to another. Not in this case. You are not calculating crop water needs, but the effect of pore pressure. The way this study is conducted the root depth is indifferent.

8964. Line 18 This can be the result either a deterioration of superficial rock mechanical properties. Change to : This can be the result OF either..

8966. Line 20. a sensitive analysis was performed. Please change to: A sensitivity analysis ..

8968. Line 13. Runoff coefficients and AWS were then computed, according to type respective watershed proportions, Please review this sentence. 8969. Line 14. Effective rainfall was 15 then estimated with an AWS of 135 mm. Why? 8971. Line 10: Sensitivity analysis 8971. Line 13. seems to explain the best the hydrosystem. Please rephrase. nfall for estimating rainfall triggered landslides. Their work is made more difficult by lack of reliable data, specially the very important temperature data from one station.

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These are the reasons  $E_{T0}$  is considered equal to  $E_{Tc}$  for this study.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 8945, 2013.

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